PEACE/WILLISTON
FISH & WILDLIFE
COMPENSATION
PROGRAM

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A Reconnaissance Survey Of Dina Lake (#5)

A. R. McLean
1991

PWFWCP Report No. 104

105-02900/

The Peace/Williston Fish & Wildlife Compensation Program is a cooperative venture of BC Hydro and the provincial fish and wildlife management agencies, supported by funding from BC Hydro. The Program was established to enhance and protect fish and wildlife resources affected by the construction of the W.A.C. Bennett and Peace Canyon dams on the Peace River, and the subsequent creation of the Williston and Dinosaur Reservoirs.

Peace/Williston Fish and Wildlife Compensation Program, 1011 Fourth Ave. 3rd Floor, Prince George B.C. V2L 3H9

Website: *www.bchydro.bc.ca/environment/initiatives/pwcp/*

This report has been approved by the Peace/Williston Fish and Wildlife Compensation Program Fish Technical Committee.

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A RECONNAISSANCE SURVEY OF

DINA LAKE (#5)

WATERSHED: Parsnip River

DATE OF SURVEY: June 5. 6. 7. 1991

FIELD CREW LEADER: A.R. McLean

FIELD ASSISTANT: A.R. Langston

WILLISTON/PEACE FISHERIES COMPENSATION PROGRAM

B. C. HYDRO

ENVIRONMENTAL RESOURCES

and

B.C. ENVIRONMENT

RECREATIONAL FISHERIES BRANCH

REPORT PREPARED BY: A.R. McLean

REPORT EDITED BY: A.R. Langston/B.G. Blackman

RELEASED BY: _____

D.H.G. Ableson, Regional Fisheries Biologist

LAKE: **Dina #5** **SYSTEM NAME: Unnamed C.**

A.S.A.P. REFERENCE NO.: **SYSTEM NO: 230-9036**

DATA ON FILE FOR THIS SURVEY

Location	X	Dissolved 02/Temp. Profiles	X
Physical Data	X	Winter Dissolved 02/Temp. Profiles	X
Bench Mark	X	Netting Record	X
Terrain Features	X	Lake Catch Summary	X
Access	X	Individual Fish Data	--
Resorts and Campsites	X	Fish Preserved	--
Other Developments	X	Stomach Analysis	--
Obstructions and Pollutions	X	Scale Reading	--
Special Restrictions	X	Location of Inventory Sites	X
Aquatic Plants	X	Photograph Directory	X
Wildlife Observations	X	Appendices:	
Miscellaneous Comments	X	A: Water Chemistry Analysis	X
Lake Drainage	X	B: Tributary Stream Data	X
Fisheries Management Comments	X	Bathymetric Map Reduction	X
History of Previous Surveys	X	Bathymetric Map	X
Water Chemistry Summary	X		

LOCATION

Location: 25 km north of Mackenzie
Elevation: 686 m +/-
Latitude/Longitude: $55^{0}30'32":123^{0}16"51"$ U.T.M.: 10.4823.61513
Management Unit: 7-30 N.T.S. Map No.: 93-0/11

Drainage: Outlet C. --> Dina Lake (#4) --> Unnamed C. --> Heather Lake --> Unnamed C. --> Williston Reservoir (Parsnip Reach) --> Peace River

PHYSICAL DATA

Lake Drainage Area:	--	km^2	Volume:	574000	m^3
Water Surface Area:	131000	m^2	Flushing Rate:		
Area above 6 m contour:	92300	m^2	Perimeter of Islands		m
Shoreline Perimeter:	1800	m	Number of Islands:	0	
Maximum Depth:	11.8	m	Mean Depth:	4.4	m
Filterable Residue (TDS):	44	mg/l	Secchi Reading:	0.9	m

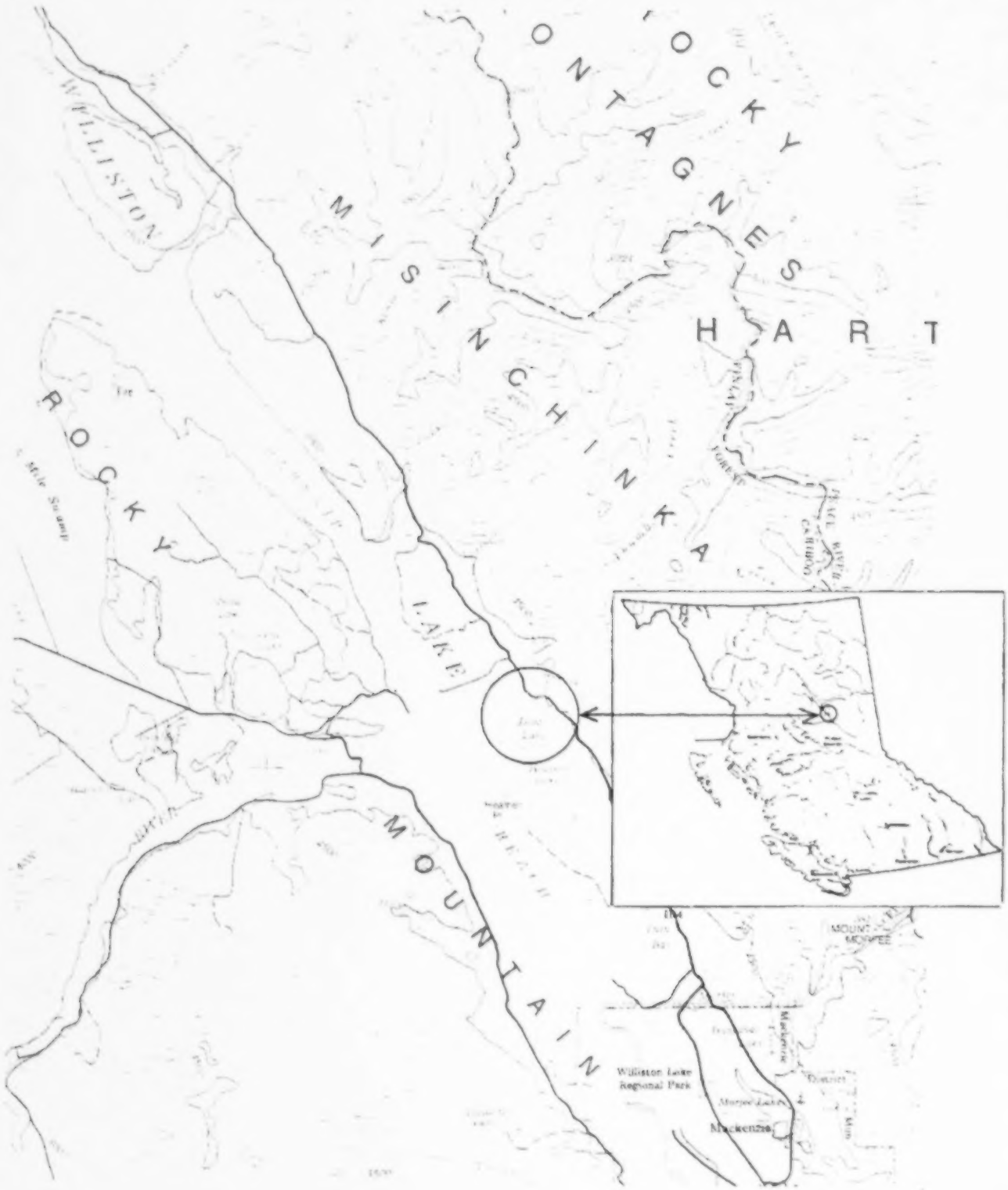
Sounding Device: Lowrance X-15 Elevation Source: Contour interpolation

BENCHMARK

(Iron spike, center of red circle) located at northeast end, (Forest Service trail access point) 5.1m from waters edge, in a 27 cm diameter Lodgepole pine tree. Benchmark is set 2.0 m above current lake level.

High water mark: Lake appears to be at maximum pondage.

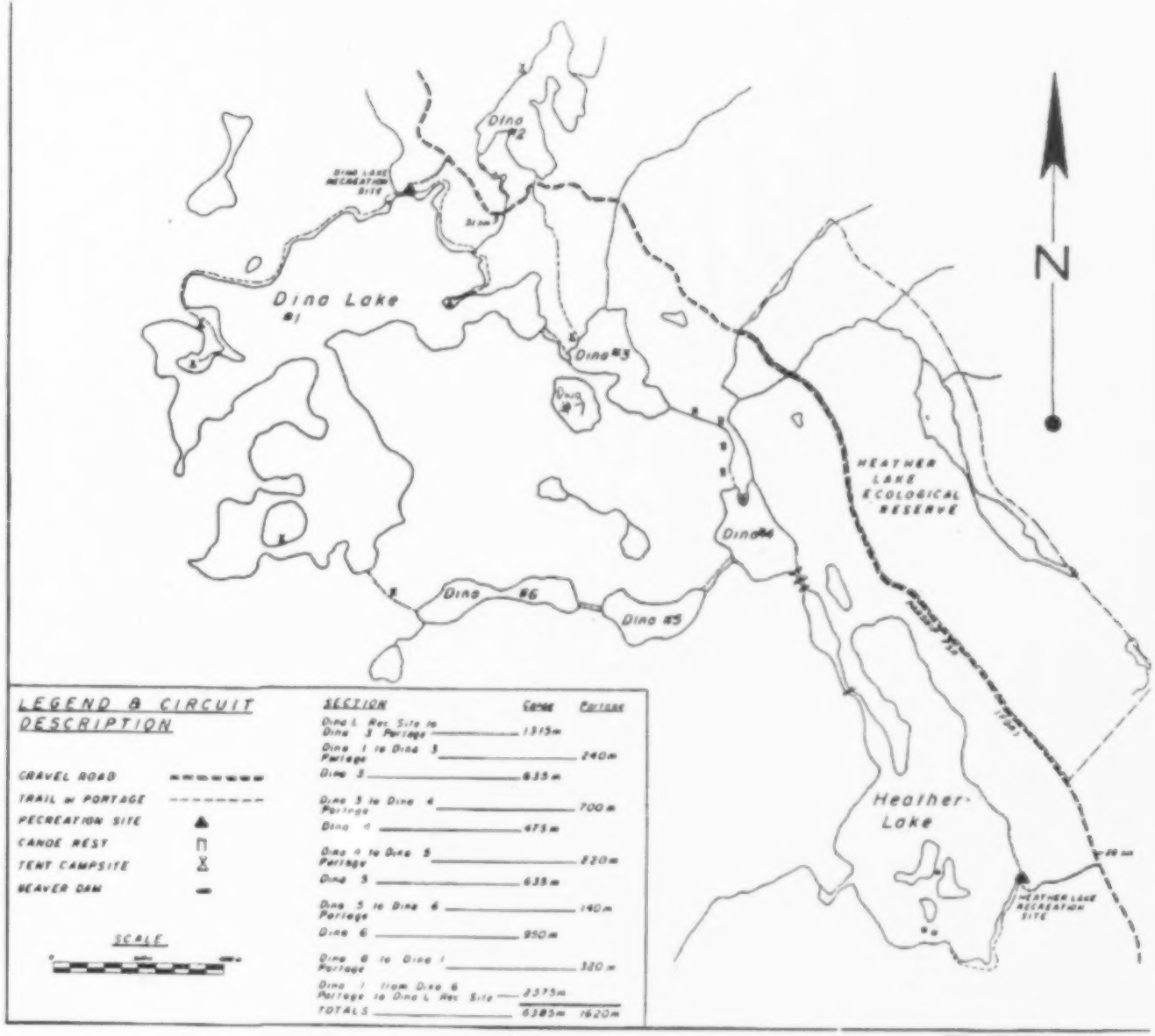
Location of Dina Lakes Scale 1:250 000



Forest Service

Recreation Sites

Heather-Dina Lakes Canoe Circuit



LEGEND & CIRCUIT DESCRIPTION

GRAVEL ROAD

TRAIL or PORTAGE

RECREATION SITE

CANOE REST

TENT CAMPSITE

BEAVER DAM

SCALE

SECTION	Canoe	Portage
Dina 1 Rec. Site to Dina 3 Portage	1315m	
Dina 1 to Dina 3 Portage		240m
Dina 3	635m	
Dina 3 to Dina 4 Portage		700m
Dina 4	475m	
Dina 4 to Dina 5 Portage		220m
Dina 5	635m	
Dina 5 to Dina 6 Portage		140m
Dina 6	950m	
Dina 6 to Dina 1 Portage		320m
Dina 1 from Dina 6 Portage to Dina 1 Rec. Site	2375m	
TOTALS	6385m	1620m

Lake: **Dina #5**

TERRAIN FEATURES

Immediate Shoreline:

The terrain immediately surrounding the lake is moderate to steep, with the exception of the gradually sloped northeast and northwest shores. Dina Lake #5 is treed to shoreline. Forest cover is predominately coniferous (spruce, Lodgepole pine, fir) with some deciduous trees present (birch, trembling aspen and alder). The shoreline is typified by a fringe of sedgegrass and Equisetum sp. Marshes are situated at the inlets on the west and southeast shores of the lake. Recreational access to the lake is poor (due to fringe of sedgegrass) with the exception of the northeast and northwest ends. Shoreline substrate is organic. Lake bottom drops off steeply on the north and moderate on the south shoreline.

Surrounding Country:

The forest cover is continuous, consisting predominately of conifers (spruce, fir, Lodgepole pine) with trembling aspen and birch intermixed throughout. Dina Lake #5 is surrounded by low rolling terrain, with a view of a moderate-steeply sloped mountain to the east.

Dina Lake #5 is situated within the sub-boreal spruce biogeoclimatic zone.

Lake: **Dina #5**

ACCESS

Directions:

Dina Lake #5 is approximately a six (6) minute helicopter flight from a cutblock, located 31.6 km north of Mackenzie on the Parsnip River Forest Service Road (also known as the Finlay Forest Road).

Alternately one can drive north 28.6 km from Mackenzie to the Dina Lake Recreation Site (B.C. Forest Service) and gain access into Dina Lake #5 via the "Dina Lakes Canoe Circuit".

Road Type and Conditions:

None.

Restrictions:

None noted.

RESORTS AND CAMPSITES

None, however a portage trail (for the Dina Lake Canoe Circuit) exists at the northeast and northwest ends of the lake, the access points are marked with easily identifiable red triangular signs.

OTHER DEVELOPMENTS

None.

Lake: **Dina #5**

OBSTRUCTIONS AND POLLUTIONS

A beaver dam, located 125m upstream of Dina Lake #5 on inlet #1 appears to be an obstruction to upstream fish passage. A second dam located on the outlet, approximately 75 m downstream from the lake, also appears to be a barrier to upstream fish passage.

SPECIAL RESTRICTIONS

None noted.

AQUATIC PLANTS

Aquatic plants were moderately abundant, located mainly near lake shore. The following species were identified in the field. None were collected.

Nuphar sp. sedgegrass

Potamogeton sp. Equisetum sp.

WILDLIFE OBSERVATIONS

2	adult female moose	2	calf moose
4	unidentified water fowl	4	Canada geese
1	male mallard	1	lesser scaup
1	golden eagle	1	beaver

MISCELLANEOUS COMMENTS

Many frogs noted in the beaver ponds and marshes.

A management plan encompassing all the Dina Lakes has been produced by D.A. Jesson, Recreational Fisheries Branch, Prince George.

Bathymetric map: The lake outline is from an enlargement of aerial photograph B.C. 7327 No. 121, flown July 1971.

Lake: **Dina #5**

LAKE DRAINAGE

General:

Dina Lake #5 has two inlets and one outlet. The outlet flows northeast approx. 0.25 km to its confluence with Dina Lake #4. Dina Lake #4's outlet, in turn, flows southeast 0.78 km to Heather Lake. Heather Lake's outlet drains southwest approx. 2.5 km to its confluence with Williston Reservoir (Parsnip Reach).

Major Systems:

There are no major systems.

Minor Systems:

Unnamed C. - inlet #1

This creek is approximately 140 m in length and drains from Dina Lake #6 into Dina Lake #5 at the northwest shore. An active beaver dam is located approx. 125 m upstream of Dina Lake #5. This barrier to upstream fish migration is approximately 9.5 m in length and 1.2 m in height, and controls the lake level in Dina Lake #6. Approximately 115m upstream of the lake, the inlet had an average wetted width of 0.25 m, average depth 2 cm, water temperature 13°C and no noticeable flow. This meandering inlet offers no salmonid spawning or rearing habitat.

See point card for additional information.

Lake: **Dina #5**

Unnamed C. - inlet #2

The first 200 m of inlet #2 were invesigated. This inlet, which enters the lake on the southeast shore, has an average wetted width of 40 cm, average depth of 4.0 cm, and a complete organic substrate. This intermittent inlet, with some subterranean flow affords no fisheries value.

Unnamed C. - outlet

Beaver dam #1, located at the outlet, controls the current water level in the lake. This dam is approximately 25 m in length and 0.55 m in height. Beaver dam #2 (approx. 20 m in length, 1 m in height) is located 75 m downstream of the lake. Its pond, which extends to the base of beaver dam #1, has a wetted width of 25 m, a complete organic substrate and an average depth of 0.6 m. Beaver dam #3 (approx. 15 m in length, 0.8 m in height) is located approx. 125 m downstream of the lake. Its pond (complete organics) extends to the base of beaver dam #2. The remaining 125 m of outlet has a substrate consisting entirely (>20 cm in depth) of organics. This outlet affords no salmonid spawning habitat.

Lake: **Dina #5**

FISHERIES MANAGEMENT COMMENTS

Dina Lake #5 supports a population of coarse fish. An overnight net set produced redside shiners, suckers, and northern Squawfish. No salmonids were captured. No salmonid spawning habitat was observed, and creation of such would be expensive due to lack of access and further complicated by beaver activity. Summer and winter oxygen results indicate that only the upper 3.0 m of the water column is capable of supporting a sport fish population.

Due to the large numbers of coarse fish captured and lack of spawning habitat, a stocking program appears questionable.

HISTORY OF PREVIOUS SURVEYS

Lake Surveys:

An oxygen/temperature series was collected on Dina Lake #5 on March 18, 1991, by A.R. McLean, Williston/Peace Fisheries Compensation Program, Prince George.

Other Related Surveys:

None known.

Lake: **Dina #5**

WATER CHEMISTRY SUMMARY **Limnology Station No. 1**

Field Conditions:

Date:	June 7, 1991		
Time:	1025 hrs	Air Temperature:	18.0 ^{0}C
Wind Velocity:	5 km/hr	Wind Direction:	west
Cloud Cover:	9/10 o.c.	Surface Condition:	v. light ripple
Secchi Disc:	0.9 m	Water Colour:	yellow/olive drab

Method(s) Used:

Dissolved Oxygen:	YSI model 58 oxygen/temperature meter
Water Temperature:	YSI model 58 oxygen/temperature meter
Air Temperature:	Hand-held alcohol thermometer
pH (field):	Digital pH pocket tester
H2S (field):	Hach H2S field test kit
Laboratory Used:	Zenon Environmental Inc. B.C. Laboratory Services
Water Sampler:	Verticle Alpha Water Bottle (Vandorn)
Substrate Sampler:	Substrate sample not taken

Water Sample Chemistry: SEAM Site No.: Not determined

	Sampling Depths			
	Surface (O m)		**Lower (11.0 m)**	
pH (field)	9.0		7.8	
pH (lab)	8.0		6.5	
Specific Conductance (lab)	20	umhos/cm	33	umhos/cm
Filterable Residue 105°C (lab)	44	mg/l	52	mg/l
H2S (field)	--	mg/l	0.1	mg/l

Bottom Depth:	11.5	m
Substrate Sample Depth:	--	m

Note: Hydrogen sulphide odour detected from lower sample.
Water samples too long in transit to guarantee accuracy of lab pH results.

Lake: **Dina #5**

DATE: June 7, 1991

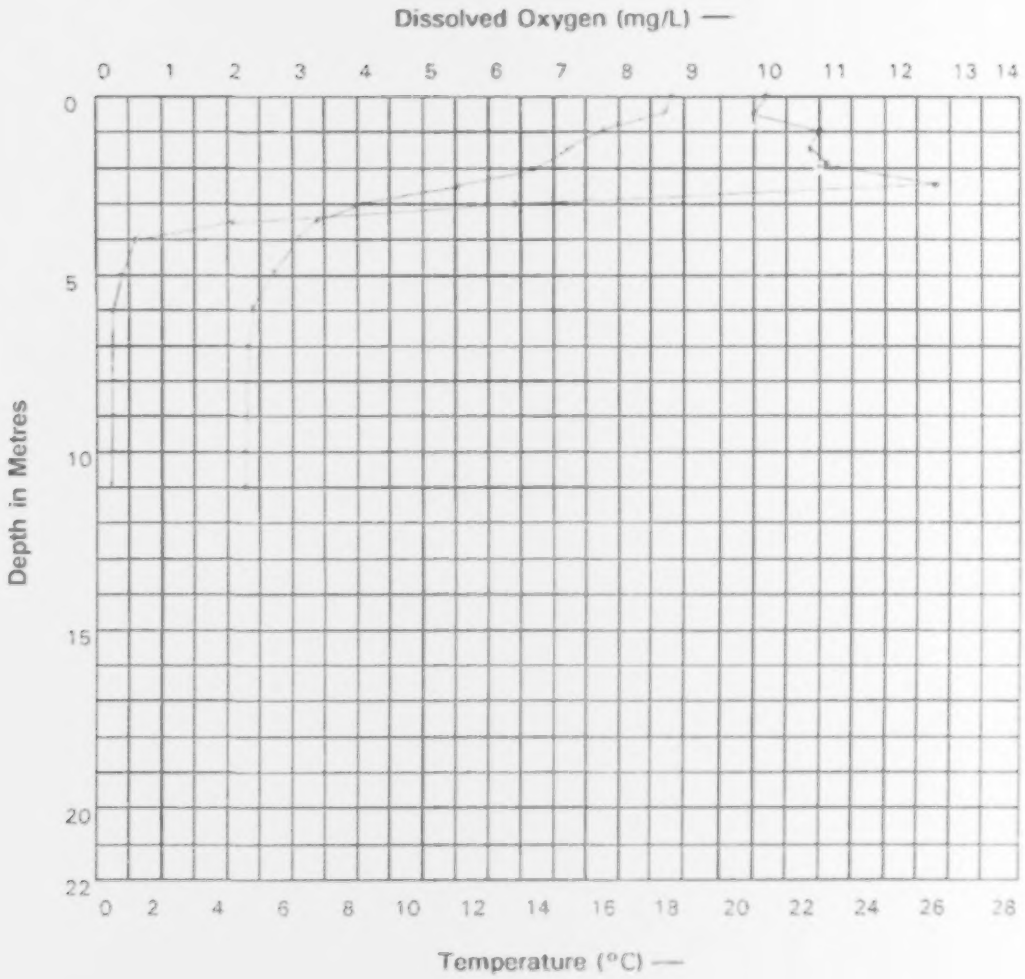
SUMMER OXYGEN/TEMPERATURE DATA

DEPTH (m)	02 (mg/l)	TEMP (°C)
Surface	10.2	17.6
0.5	10.0	17.4
1.0	11.0	15.5
1.5	10.8	14.4
2.0	11.1	13.3
2.5	12.8	11.0
3.0	6.4	8.1
3.5	2.1	6.9
4.0	0.6	6.2
5.0	0.4	5.4
6.0	0.3	4.9
7.0	0.3	4.8
8.0	0.3	4.7
9.0	0.3	4.6
10.0	0.3	4.6
11.0	0.3	4.6
11.5	Bottom	

Lake: Dina #5

SUMMER

DISSOLVED OXYGEN AND TEMPERATURE SERIES



Lake: **Dina #5**

DATE: March 18, 1991
Time: 1630 hrs
Air temp.: 8 °C
Wind: light-moderate

CREW: A.R. McLean
Snow depth: 4 cm
Ice Depth: 64 cm
Weather: clear/sun

WINTER OXYGEN/TEMPERATURE DATA

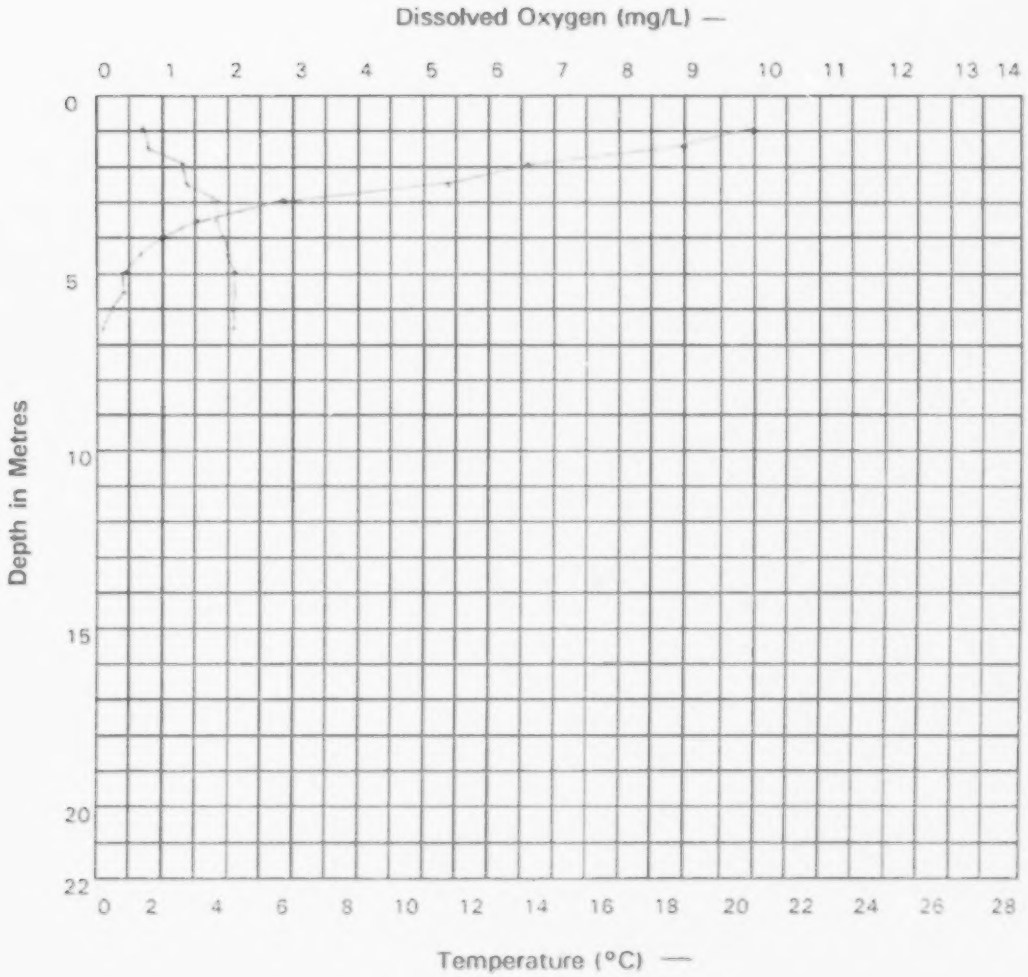
DEPTH (m)	02 (mg/l)	TEMP (°C)
Surface *	-	-
0.5	-	-
1.0	10.0	1.4
1.5	9.0	1.6
2.0	6.6	2.7
2.5	5.4	2.9
3.0	2.9	3.6
3.5	1.5	3.7
4.0	1.0	3.9
4.5	0.7	4.0
5.0	0.5	4.1
5.5	0.4	4.1
6.0	0.3	4.1
6.5	0.2	4.1
6.9	Bottom	

* Surface is referenced from top of ice, i.e. surface = top of ice.

Lake: Dina #5

WINTER

DISSOLVED OXYGEN AND TEMPERATURE SERIES



Lake: **Dina #5**

NETTING RECORD

Mesh sizes experimental order: 25, 76, 51, 89, 38, 64 mm

NETTING SITE #1

Type:	Sinking monofilament		
Date Set:	June 5, 1991	Time:	2105 hrs
Date Lifted:	June 6, 1991	Time:	1915 hrs
Net Dimensions:	Length: 91.4 m	Depth:	2.4 m
Shallow End Mesh Size:	25 mm	Depth:	1.0 m
		Substrate:	fines/organics
Deep End Mesh Size:	64 mm	Depth:	6.0 m
		Substrate:	organics

Lake: **Dina #5**

LAKE CATCH SUMMARY

SPECIES	NET SITE NO.				ANGLED	OTHER	TOTAL	NUMBER SAMPLED	NUMBER PRESERVED	SIZE RANGE (cm)
	1	2	3	4						
coarse sucker	10						10			12.0 - 42.0
longnose sucker	34						34			30.0 - 33.0
redside shiner	45						45			10.0 - 10.6
northern Squawfish	10						10			12.0 - 32.7

Comments:
Many redside shiners caught in the net were partially eaten. The cause was determined to be northern Squawfish.
All fish were captured in the shallow end mesh sizes (25mm and 76mm).

Minnow Traps:

BAIT: Sardines

*	HOURS	DEPTH (m)	SUBSTRATE	SPECIES	SIZE RANGE (cm)
1	21.50	0.7	fines/organics	1 Sculpin	
2	21.50	1.0	fines/organics	Nil	

LOCATION OF INVENTORY SITES

Figure 1

Lake: Dina #5

Reference No.: B.C. 7327:121

Reference Date: July, 1971

Scale 1:3593

Plate number, area, and direction

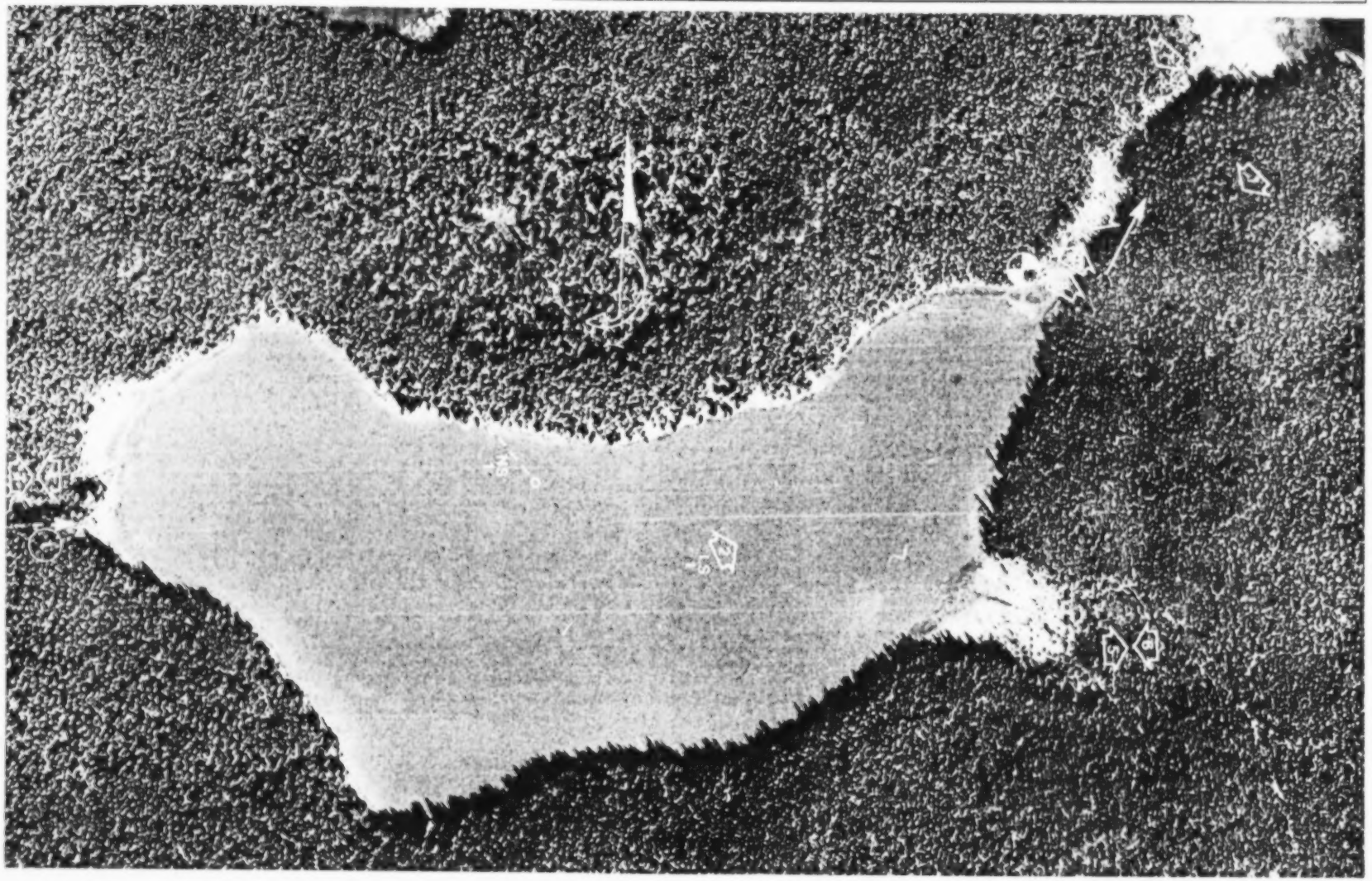
Point sample, number, and location

Bench mark

LS — Limno station location and number

NS — Netting site location and number

Stream flow direction and number



Lake: **Dina #5**

PHOTOGRAPH DIRECTORY

Negative #	Plate #	Description
R3:4A	1	Aerial view of Dina Lake #5 looking west. Note lake outlet in foreground.
R4:3A,4A	2	Panoramic view of Dina Lake #5, looking east towards outlet, taken from limno station.
R3:12A	3	View downstream at point sample site #1, on inlet #1, 115 m upstream from lake.
R3:8A	4	View looking upstream at beaver dam on inlet #1, approx. 125 m upstream from lake. This dam, which has an approx, length of 9.5 m and height of 1.2 m, appears to be an obstruction to upstream fish passage.
R3:15A	5	View looking upstream at typical site on inlet #2, taken 200 m upstream of lake. No flow noted at this location.
R3:16A	6	View looking downstream at typical site on inlet #2, taken 200 m upstream of lake.
R3:6A	7	Aerial view looking upstream at lake outlet. Arrow points to beaver dam which controls lake level.
R3:17A	8	View looking downstream at beaver dam #1 located at lake outlet. This dam (approx. 25 m in length and 0.55 m in height) controls the current lake level.
R3:19A	9	View looking downstream at pond created by beaver dam #2 on outlet, taken from beaver dam #1.
R3:22A	10	View looking upstream at beaver dam #2, located 75 m downstream of the lake. This dam appears to be a barrier to upstream fish passage.

Lake: **Dina #5**

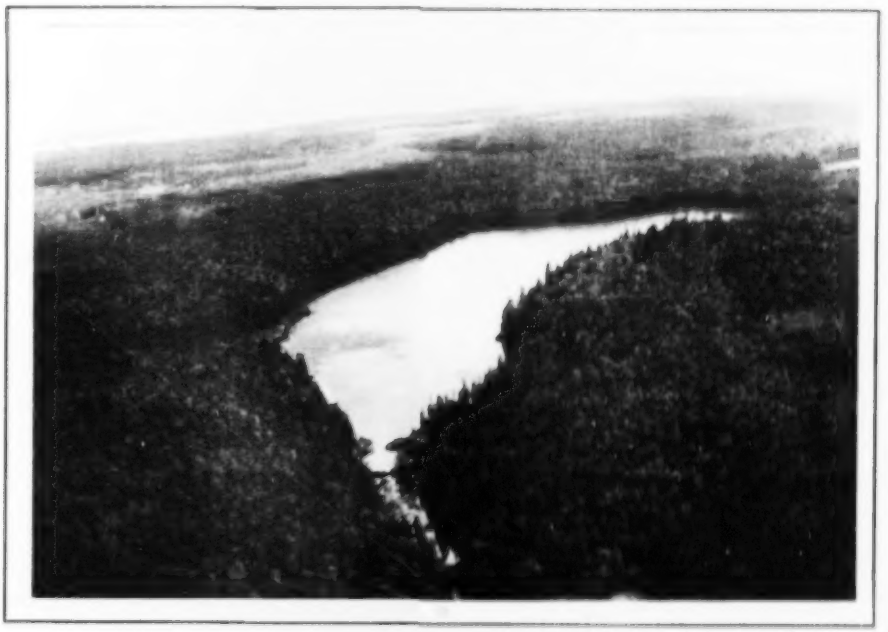


Plate 1:
Aerial view of Dina Lake #5 looking west.
Note lake outlet in foreground.

Lake: Dina Lake #5

Plate 2: Panoramic view of Dina Lake #5 looking east towards outlet, taken from limno station.

Lake: **DINA #5**

Plate 3: View downstream at point sample site #1, on inlet #1, 115m upstream from lake.

Plate 4: View looking upstream at beaver dam on inlet #1, approx. 125 m upstream from lake. This dam, which has an approx. length of 9.5 m and height of 1.2 m, appears to be an obstruction to upstream fish passage.

Lake: **DINA #5**

Plate 5:
View looking upstream at typical site on inlet #2, taken 200 m upstream of lake. No flow noted at this location.

Plate 6:
View looking downstream at typical site on inlet #2, taken 200 m upstream of lake.

Lake: **DINA #5**

Plate 7:
Aerial view looking upstream at lake outlet. Arrow points to beaver dam which controls lake level.

Plate 8:
View looking downstream at beaver dam #1 located at lake outlet. This dam (approx. 25 m in length and 0.55 m in height) controls the current lake level.

Lake: **DINA #5**

Plate 9: View looking downstream at pond created by beaver dam #2 on outlet, taken from beaver dam #1.

Plate 10: View looking upstream at beaver dam #2 located 75 m downstream of the lake. This dam appears to be a barrier to upstream fish passage.

Lake: Dina #5

Appendix A

LABORATORY REPORT

Water Chemistry Analysis

FISH - [illegible]

Submitted [illegible]

Address [illegible]

B.C. MINISTRY OF ENVIRO...NT
JUN 25 1991
RECEIVED
PRINCE GEORGE, B.C.

Phone No.

Audit Sample
Client study reference code ( )
Sampling agency code (PG)

Site (NODSITE [illegible] LAKE #5

Sample Adjustment
Sample State Fresh water
Sample Description (Control)

This form was processed by the computer on 11-JUN-1991 as REGULAR
The cost [illegible]

Routine analysis
[illegible]
[illegible]

Site: [illegible] [illegible] LAKE AT

From: 91/06/0[illegible] 0001 To: 91/06/07 0001
Depth Range: 0.0 - 0.0 Tide:
Sample State: Fresh water
Sample Comment:

Parameter Description	Result	Units	Analytical Technique (Sparcode/Medium/Pres'n)
pH	[illegible]	pH units	Automated pH Meter (00041220/02/01)
Result: 8.0; pH units; Analyzed outside of optimal time frame.			
Residue Nonfilt	17	mg/L	Grav. 9 cm Buchner, 105C (00081070/02/01)
Specific Conductance	20	uS/cm	Cond. Meter Siebold (00111160/02/01)
Res. Filterable 1.0u	44	mg/L	Gravimetric 1.0u Filter (007H1032/02/01)
Alkalinity Total as [illegible]	[illegible]	mg/L	Automated Electrometer (01021210/02/01)
[illegible]ult: 8.0; mg/L; Analyzed outside of optimal time frame.			

FISH - PRIMEX REPROD ATTN ARNE R. LANGSTON Sample 91009858

Site [illegible] DRW LAKE #5

From 91/05/07 0002 To 91/06/07 0002
Depth Range 11.0 11.0 Tide
Sample State fresh water
Sample Content

Parameter Description	Result	Units	Analytical Technique (Sparcode/Medium/Pres'n)
pH		pH units	Automated pH Meter (00041220/02/01)
Result	6.5, pH units	Analyzed outside of optimal time frame	
Residue Nonfilt	17	mg/L	Grav, 9 cm Buchner, 105C (00081070/02/01)
Specific Conductance	32	uS/cm	Cond Meter Siebold (00111160/02/01)
Res Filterable 1 Ou	52	mg/L	Gravimetric 1 Ou Filter (007H1032/02/01)
Alkalinity Total, + E		mg/L	Automated Electrometer (01021210/02/01)
ult	10.8, mg/L	Analyzed outside of optimal time frame	

Lake: Dina #5

Appendix B

TRIBUTARY STREAM DATA

Lake: **Dina #5**

System Name: **Unnamed C.** **inlet #1**

System No.:

Site Location: Sample Site #1, located approx. 115m upstream on inlet #1

Date:	June 6, 1991	Time:	1410 hrs
Channel Width:	0.9 m	Water Temp.:	13.0 ^{0}C
Wetted Width:	0.25 m	Stage (flow)	N/A
Max. Depth:	4.0 cm	Velocity:	O m/sec
Avg. Depth:	2.0 cm	Field Gradient:	0.1 %
Turbidity:	4.0 cm	Colour:	gin clear

Flood Signs:

Height: 20 cm

Type: clay bank

Substrate Breakdown:

Fines	Small Gravel	Large Gravel	Cobble
100 %	-- %		--%

Boulder	Bedrock
-- %	%

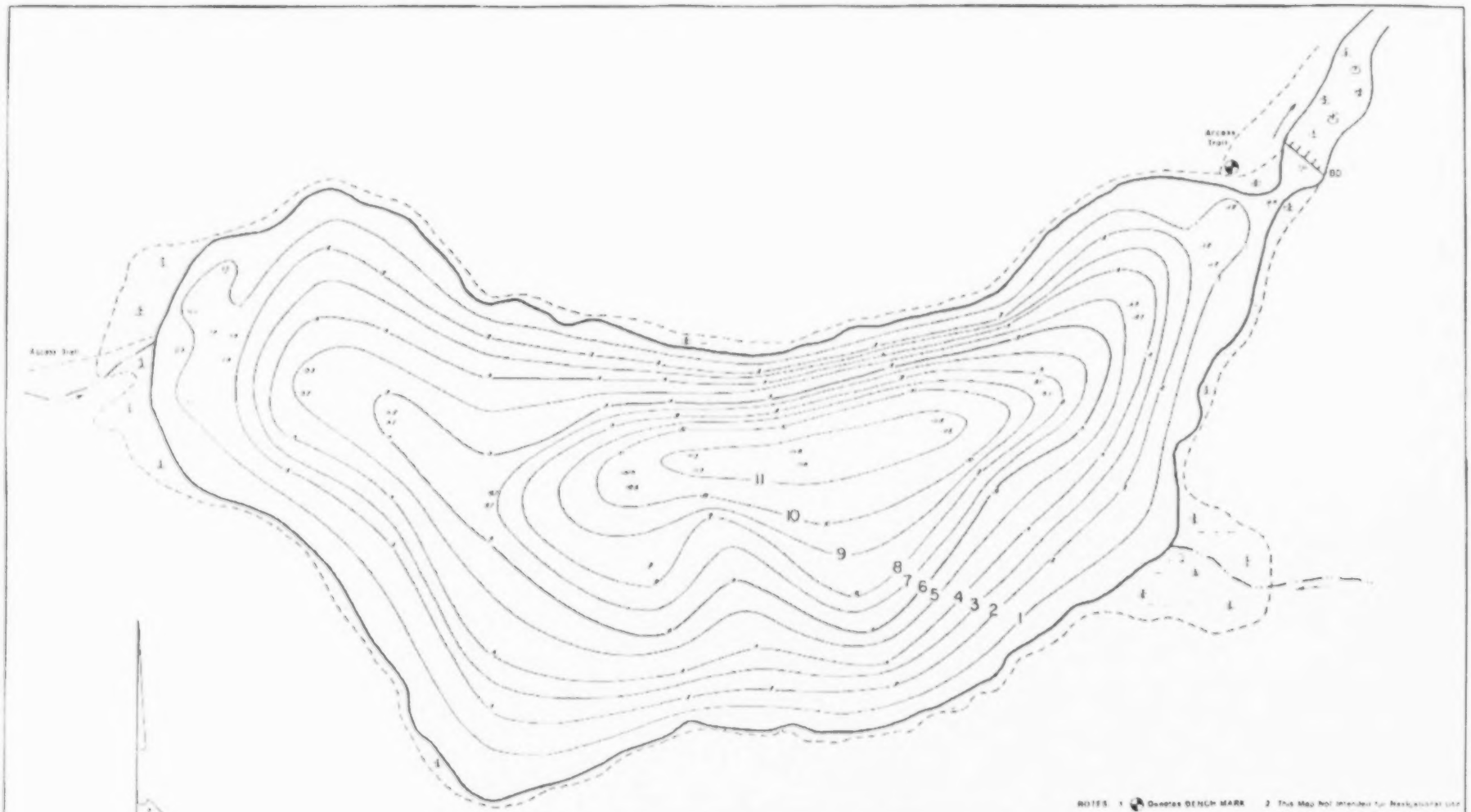
Substrate Compaction: low Sand: O %

Banks:

	Form	Height	Stability
Right	repose	0.45 m	stable due to rooted vegetation
Left	repose	0.50 m	stable due to rooted vegetation

Comments:

Flow stage dependent on beaver dam condition.
No spawning or rearing habitat noted.



NOTES: 1. Denotes BENCH MARK 2. This Map Not Intended for Navigational Use. Uncharted Rocks and Shoals May Exist

Reduced to
50%
of Original

INSET MAP
Scale 1:600 (est)

SURVEYED BY: A.R. McLEAN DATE: JUNE 6, 1991
OUTLINE SOURCE: AIRPHOTO BC 7327 121 (JULY 1971)

STATISTICS AT TIME OF SURVEY

ELEVATION	690 m ±
SURFACE AREA	151 000 sq. m
AREA ABOVE 6m CONTOUR	92 300 sq. m
VOLUME	574 000 cu. m
MEAN DEPTH	4.4 m.
MAX. DEPTH	11.0 m.
PERIMETER, MAIN SHORE	1800 m
PERIMETER, ISLANDS	m
BENCH MARK HEIGHT ABOVE WATER LEVEL	2.0 m.

Province of British Columbia Ministry of Environment

FISHERIES BRANCH
INVENTORY OPERATIONS

DINA LAKES (#5)

DEPTHS IN METERS

WATERSHED CODE: 230-9038		UTM CO-ORDINATE: 10 4876 5514
MAP: 7-30	FAIR DRG: R.A.D.	REV. DATE
PLOTTING: R.S.D.	FAIR DRG. CHECK: D.M.C.	SCALE: 1:1500
CONTOURS: J.A.B.	DRAFT DATE: FEB 19, 1992	
ENUMERATING: D.M.C.	APPROVED:	INT. & NO: 920/11
TECH. CHECK: D.M.C.		